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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/041,935	01/07/2002	Yukihisa Kobayashi	9319S-000319	4909
27572	7590	09/29/2004	EXAMINER	
HARNESS, DICKEY & PIERCE, P.L.C. P.O. BOX 828 BLOOMFIELD HILLS, MI 48303			PHAN, THIEM D	
			ART UNIT	PAPER NUMBER
			3729	

DATE MAILED: 09/29/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/041,935

Applicant(s)

KOBAYASHI, YUKIHISA

Examiner

Tim Phan

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 06 August 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 15, 16 and 21-32 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 15, 16 and 21-32 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
  - 2) ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 6/24/04.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Specification***

1. The disclosure is objected to under 37 CFR 1.71. For example, the following items are not understood: "... the whole circuit board becomes a high temperature ..." (Cf. Paragraph 2, line 9; "... an IC chip etc. have increasingly heightened in the density ..." (Cf. Paragraph 3, line 1; "... can comply with the desire ..." (Cf. Paragraph 3, line 5); "... an ACF is one of major systems." (Cf. Paragraph 3, line 6; etc ... It appears that the disclosure is a version of computer-translated copy of non-English language application.

Applicant is required to submit an amendment which clarifies the entire disclosure so that the examiner may closely review and properly act on the application.

A substitute specification in proper idiomatic English and in compliance with 37 CFR 1.52(a) and (b) is required. The substitute specification filed must be accompanied by a statement that it contains no new matter.

### ***Title***

2. The following title is suggested: "A Method of Manufacturing a Circuit Board".

***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 15, 21, 23, 28 and 32, as best understood, are rejected under 35 U.S.C. 102(e) as being anticipated by Uchiyama (US 6,265,770 B1) hereinafter '770.

**As applied to claim 15**, the '770 teaches a process of mounting a semiconductor component on a substrate (Cf. Abstract), comprising:

- the step of mounting a first component (Cf. Fig. 1, 2) on a substrate (Cf. Fig. 1, 3) by solder connection (Cf. Col. 5, lines 20 ff.);
- the step of arranging an anisotropic conductive film (Cf. Fig. 1, 4) on a predetermined position of the substrate (Cf. Fig. 1, 3);
- the step of arranging a second component (Cf. Fig. 1, 6) on the anisotropic conductive film (Cf. Fig. 1, 4); and
- the step of thermocompression-bonding (Cf. Col. 5, lines 56 ff.) the second component (Cf. Fig. 1, 6) to said substrate (Cf. Fig. 1, 3) with said anisotropic conductive film (Cf. Fig. 1, 4) held therebetween;

- wherein said step of arranging said anisotropic conductive film on the predetermined position of said substrate is performed (Cf. Fig. 1, 1) after said step of mounting the first component on said substrate by the solder connection.

**As applied to claim 21**, the '770 teaches a process of mounting a semiconductor component on a substrate (Cf. Abstract), comprising:

- a.) selecting a band region (Cf. Fig. 1, area A) on a surface of the circuit board or substrate (Cf. Fig. 1, 3);
- b.) soldering a first component (Cf. Fig. 1, 2; Col. 5, lines 20 ff.) onto the circuit board (Cf. Fig. 1, 3) outside of the band region (Cf. Fig. 1, A); and
- c.) after step b.) where the first component (Cf. Fig. 1, 2) is soldered (Cf. Fig. 1, 1; Col. 5, lines 20 ff.) to the substrate (Cf. Fig. 1, 3), mounting a second component (Cf. Fig. 1, 6) on the substrate (Cf. Fig. 1, 3) within the band region (Cf. Fig. 1, A) with an anisotropic conductive film (Cf. Fig. 1, 4).

**As applied to claims 23 and 28**, the '770 teaches that the first component (Cf. Fig. 1, 2) is selected from the group of passive and mechanical components (Cf. Col. 5, lines 15 ff.), and the second component comprises a semiconductor device (Cf. Fig. 1, 6; col. 11, line 37) or LCD or power source IC.

**As applied to claim 32**, the '770 teaches a dummy electrode or ground wire (Cf. Fig. 1, 12) at a position associated with the second component or LCD chip (Cf. Fig. 1, 6).

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 16, 22, 24-27 and 29-31, as best understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over the '770.

**As applied to claim 16**, the '770 teaches a process of mounting a semiconductor component on a substrate, which reads on applicant's claimed invention, except for mounting the first component (Cf. Fig. 1, 2) on the substrate (Cf. Fig. 1, 3) by the solder connection such as a reflow treatment.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to solder (Cf. Col. 5, lines 20 ff) the connection by reflow treatment, which is well known in order to increase production.

**As applied to claim 22**, the '770 teaches the claimed invention, including the thermal press-bonding (Cf. Col. 5, lines 57 ff.) except for having a heated bonding head pressing against the component (Cf. Fig. 1 or 8, 6) in selected area (Cf. Fig. 1, A) without impacting the first component (Cf. Fig. 1, 2).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have a heated bonding head pressing against the component (Cf. Fig. 1 or 8, 6) in selected area (Cf. Fig. 1, A) without hitting the first component (Cf. Fig. 1, 2) in order concentrate all the heat toward melting the anisotropic conductive film (Cf. Fig. 1, 4) under the chip (Cf. Fig. 1, 6).

**As applied to claim 24**, the '770 teaches the claimed invention, wherein:

- the second component (Cf. Fig. 1, 6) is mounted within a band region (Cf. Fig. 1, A) selected on a surface of the substrate (Cf. Fig. 1, 3);
- the step of thermocompression-bonding (Cf. Col. 5, lines 57 ff.) the component.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have a wider band region than the compression head or device in order to accommodate different size of semiconductors to be thermocompressed by bonding head or device.

**As applied to claim 25**, the '770 teaches the claimed invention, except for providing the alignment marks outside the band region (Cf. Fig. 1, A).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the alignment marks outside the band region since it was known in the art that reference marks are utilized to assign an exact location of a band region (Cf. Fig. 1, A).

**As applied to claim 26**, the '770 teaches that a bonding region by ACF or band region is selected or set aside (Cf. Fig. 1,A) when the first components are soldered (Cf. Col. 5, lines 20 ff.) to the substrate by conventional technique such as solder reflow.

**As applied to claim 27**, the '770 teaches that the band region (Cf. Fig. 1, A) divides a first set of first components (Cf. Fig. 1, left set of 2) on one part of the substrate and a second set of first components (Cf. Fig. 1, right set of 2) on a second part of the substrate (Cf. Fig. 1, 3).

**As applied to claim 29**, the '770 teaches that the band region (Cf. Fig. 1, A) can be extended from one end to the other end of the substrate (Cf. Fig. 1, 3).

**As applied to claim 30**, the '770 teaches that the band region (Cf. Fig. 1, A) extends rectilinearly along the substrate (Cf. Fig. 1, 3).

**As applied to claim 31**, the '770 teaches that there are wiring patterns (Cf. Fig. 1, 11) on the substrate (Cf. Fig. 1, 3) in the band region (Cf. Fig. 1, A).

### ***Conclusion***

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.



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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tim Phan whose telephone number is 703-605-0707. The examiner can normally be reached on M - F, 9AM - 5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Peter Vo can be reached on 703-308-1789. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-1148.



Tim Phan  
Examiner  
Art Unit 3729

  
**CARL J. ARBES**  
**PRIMARY EXAMINER**

tp  
September 23, 2004